An Essay.

on

Physiology its facts and teachings

Respectfully submitted to the Faculty of the Homeopathic Medical College of Pennsylvania

By

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Order, design and fitness are impressed in plain and indelible characters on every page of the great volume of Nature. And whatever confusion may exist in the mind of man concerning any of the processes and changes that are constantly occurring in the great laboratory of the universe, cannot be charged to any want of method or explicitness in any of the countless operations in which Nature is ever engaged. But rather to a lack of close and scrutinous observation, and of patient and plodding research, to which the mind of man undisciplined by mental training has ever been indisposed

In her capacious storehouse there is emphatically a place for everything. A depository for every atom, molecule and element. All her operations indicate system, regularity and precision and in

her domain law and order reign supreme.

But man has ever been disposed to theorize and speculate, rather than observe and interrogate Nature. The slow and tedious labor of collecting facts, and from these deducing legitimate inferences and principles, to him has ever been irksome and repugnant. For centuries he has preferred to spin his theories, construct his hypotheses and promulgate his dogmas, and endeavour to square the various phenomena around him to his preconceived opinions.

Thus has it ever been in all departments of science, and in none more so than in that of Physiology.

That of which we should naturally expect to know the most he has known the least. So that in this the nineteenth

century, of the numerous transformations and processes that are constantly occurring in the different tissues and organs of the body, little comparatively is known.

So as to lead one of the greatest Physiologists to assert "There is scarcely a sound physiological principle extant"

To such as may have been in the habit of regarding the physiological doctrines of the present day as settled and established, these statements may appear strange and paradoxical

But when we separate what is positively known, and fully substantiated by facts; from what is merely supposed, or, it may be, gratuitously inferred, we shall cease to wonder at the statement and rather wonder that such is really the fact.

And if our aims and purposes as

Medical Men rise higher than his whose craft consists in the selling of so much medicine for so much money;

We shall assuredly not rest satisfied with this deplorable dearth of physiological knowledge: but, girding up our loins for manly effort, go forth with the determination to supply the need:-

Not indeed to cultivate the entire field for that were impossible:-

But confining ourselves to some more neglected portion, by diligent labor, patient research and persevering effort, seek to develope results that may serve to fill some vacant place in the great repository of physiological knowledge; and thus contribute to the resources of those who may come after us in the great and godlike work of alleviating the ills and ailments

of our race From what has been always said it must not however be inferred that physiological science has no well established facts and principles claiming our attention, and demanding our recognition; for such is not the case.

For though on many subjects much doubt and uncertainty prevails and concerning others there is yet a great deal to be learned; yet the facts of physiological science established and confirmed by the observations and experiments of reliable and intelligent men, are sufficiently weighty and important, to claim our most earnest attention and elicit from us more than mere passing remark.

The facts and teachings of physiology are important to all, both as a means of preserving health, and of regaining it

when lost. But of how much more importance must they be to that man who has chosen the responsible calling of a Physician? "To whom come the strong and the weak, the high minded, and the faint hearted; asking counsel, seeking health."

To such a one physiological knowledge is preeminently essential.

It is to him, what is the compass to the mariner in his journeyings over the deep. And yet, strange to tell, we find some Physicians virtually ignoring by their practice the truth that physiological knowledge is essentially necessary to the successful and intelligent treatment of disease; launching out into the vast Ocean of human suffering, content, even amid its gloom and obscurity and peril, with such indications as are afforded

by the flickering lights and erratic meteors of a delusive Symptomism.

In our treatment of disease an acquaintance with physiology is as requisite as a knowledge of pathology.

As both these terms are only indicative of different states of the organism; And all medication based on anything save sound pathological knowledge is mere empyricism; To know what constitutes disease, we must know what is necessary to the state called health.

Were we called upon to repair any of the simple or more complex parts of a machine, or rectify its defective workings to a successful performance of the duty intelligent action is necessary;

We should know the structure use and relation of each particular part as also

what was necessary to constitute the complex and harmonious action of the whole.

What then are the facts and teachings of Physiology?

The limits of this essay will not allow of my considering all that might be said on this point.

My aim being merely to notice some of the more prominent and obvious physiological facts and principles exemplified in the different vital acts and processes of the economy;

As also those involved in the treatment of disease and in those hygeine regulations which Physicians are in the habit of enforcing on their patients.

On the part of the Physician a knowledge of principles and an ability to

discern, recognise and apply them in all the phenomena of health and disease, and in those processes which nature sets up in restoring the integrity of the Economy, is absolutely essential to creditable, Scientific and successful practice.

And from whence can these principles be obtained? From whom can they be learned? From Nature. She must be our teacher. We cannot teach her

Indeed the utmost we can do, is to aid her And even this to be acceptable must be understandingly and opportunely offered. All man's greatest inventions and discoveries are, after all, only applications of principles and laws as old as her own creation. And the more extensive and complete is our knowledge of Nature in all her innumerable workings, the more deeply shall

be convinced of the fact, that man is but the Copyist, the imitator of nature; and often, even in spite of his most labored efforts, the copy is infinitely inferior to the original. In no vocation in life is a knowledge of principles so paramountly important as in that of a Physician.

And alas! for the interests of Science, and for that patient whose medical attendant, having ears hears not, and having eyes, sees not, who, blind to the light and teachings of Nature, pursues the well beaten path of routine, following all its turnings and windings, lead where they may. True such men may, and do succeed. But then their success is to be attributed more to good fortune than good management.

Now come to consider

specially the subject of this essay

The tissues of the organism may be divided into two classes. Primary and secondary. The primary tissues are of three kinds the cellular, the muscular and the nervous. The vital property of the cellular is elasticity, of the muscular, contractility; and of the nervous, sensibility. Distinguished chemically, we may say, the prominent constituent of the cellular is Gelatine, of the muscular is Musculin, and of the nervous, Albumen. The secondary tissues are membranes, ligaments cartilages, and a portion of the bones, hair and nails.

All tissues are composed of an aggregation of two kinds of cells — the formative and secreting. The only difference between them is, that the former secretes a solid or semi-solid substance, which remains in the

body with the debris of the cell for an appreciable time; And the latter secretes a fluid which escapes from the body with the remains of the cell that produced it.

Cellular tissue is the simplest form of animalized matter, It pervades and connects together every part of the system; And, being composed of membranous layers irregularly joined, so as to form numerous interstices of various capacities, air introduced under the skin may diffuse itself all over the surface of the body. Hence we have Emphysema, and in the case of serum being effused, Anasarca. There are two kinds of cellular tissue; The reticulated, already mentioned, and the adipose. Besides many other uses, this tissue serves as a depository for the surplus animal fat; And thus relieves the body, to some extent, from the ill effects of excessive

alimentation. This tissue is readily reproduced when destroyed, as in Anthrax.

All the actions & motions of the various parts and organs are produced by the alternate contraction and expansion of the fibres composing muscles.

Muscular tissue is of a higher grade of organization than cellular, and is not reproduced when once destroyed. Exercise of these tissues increase their bulk, while inactivity has a contrary effect. So in some subjects we find certain muscles entirely wanting, and others unusually large. Pressure hinders their developement, and, if severe and long continued, may cause their entire absorption. As size is an index of power, (caeteris paribus,) we should naturally expect that when muscular action has been interfered with, not only should

we find a decrease in the bulk of the muscles, but also a corresponding loss of power; accounting to us for the entire loss of muscular energy in cases where a limb has been suspended in one position for a length of time; And explaining why, on the removal of the suspensory bandage in Varicocele &c, the scrotum is more pendulous than formerly, the cremaster muscle having lost its former contractile energy, as those entering into the composition of the dartos.

From the facts above presented we see the importance and necessity of special exercise of those muscles which are not called into play in our daily avocations; And the injurious effects that may be anticipated from the pressure of tight clothing—; especially in the case of children; and of

the ill effects that arise from belts, stocks, corsets and indeed many mechanical contrivances employed in the treatment of disease and casualties, which, in this case, by pressing on the affected part irritate the nerves extending into it,

Giving rise to marked constitutional symptoms, and, if continued, resulting in entire suspension of all muscular energy. The highest order of tissues in the organism is the nervous. The nerve substance is the medium through which all impressions are received from the external world, and through which the brain conveys its mandates to the voluntary muscles. All motions, changes or functional actions which are performed by the muscles depend on the excitation of their nerves. The general nervous system may be divided into five divisions,— 1st The organ-

nerve System, or nerves of organic life
2nd. The Motor System 3rd. The Sentient
System. 4th The mental System 5th The
reflex System. The nerves of organic life
preside over the building and rebuilding
of the System, and the removal of the
broken down material hence forth use-
less for the purposes of the economy.

The presence or absence of
food in the stomach, or of blood in the
heart, or of bile in the liver, or air in the
lungs, is recognised and felt by these nerves
These nerves, too, have their little brains
or special centres which serve to supply
the nerve influence to particular parts
and organs and connect the whole to-
ether in close sympathetic functional
relations. The semi-lunar ganglion may
be considered as the presiding centre the

chief architect among the nerves of organic life. The organic nerves are connected with the cerebral by frequent anastomoses; which accounts for the reciprocal influence between mental impressions and bodily affections. This is exemplified in various instances. A fit of anger has changed the blood and nutrient material of the mothers breast into a deadly poison, from the effects of which the unconscious infant has expired in a short period of time. So from the same cause, the bile has become as acrid as any of the most powerful poisons, spreading broadcast through the organism the seeds of disease and death. This connection and influence explains why ulcers, which at one time appeared to be progressing favorably, suddenly and without any apparent cause exhibit an

irritable and angry appearance And so I might go on to multiply instances were it needful One truth it may be well to note in passing not because it is not known but because it is apt to be overlooked :-

That Nature has resources of a curative character far more numerous and efficient than any our Materia Medica can offer.

The motory system of nerves originates from the brain and spinal cord. In health they are under the control of the will

In many spasmodic and convulsive diseases this relation is for a time nearly or quite destroyed. They are distributed to every muscular fibre in the body and are the channels through which the mental impulse is conveyed to the muscles. In diseases affecting the brain and spinal

cord, or in injuries to either of these nervous centres, we have entire suspension of the power of the voluntary muscles to which these nerves are distributed; as in the different forms of Paralysis, or the rigid contractions of Tetanus.

The sentient nervous system. These nerves like the last mentioned have their origin from the brain and spinal cord. They are the instruments of communication between the external world and the brain, The media of the external senses, seeing, hearing, tasting, smelling and feeling. Thus the optic nerve conveys to the brain impressions of light, the auditory of sound, the gustatory of savors, the olfactory of odors, and the tactile, which are distributed to all parts of the body, convey to the brain impressions

of the mechanical and chemical properties of bodies, as heat, cold, form, size &c
In this connection we may notice the derangement to which these nerves of special sense are subject when acted upon by many medicinal, physical and morbid agents; and the astonishing degree of acuteness of perception to which these nerves can be educated by diligent culture; as also the great importance of such culture on the part of the Physician, to whom, more than any other man, they are preeminently useful, as the means through which much valuable information can be gained. In some cases of Compression of the brain, and by long continuance in dark and deeply shaded situations, and under the influence of Belladonna Hyosyamus &c, the pupils remain

dilated, the nervous fibres of the iris being paralyzed thus prevent their contraction. Under exposure to very strong light, and in cases of Acute Phrenitis, as also under the action of Arnica, Opium, &c, the pupils are contracted.

All excesses, by exhausting the nervous energy of the organism, may impair the power of vision and eventually terminate in complete Amaurosis. Hence severe night study, intemperance in eating and drinking, sexual excesses and exposure to strong light, should all be guarded against.

The function of hearing is often wholly or partially lost, the auditory nerves being paralyzed by cold or by the compression induced by tumors, purulent formations or extravasations into

the Eustachian tubes.

In acute Otitis, when we have an increased flow of blood to the part, we have, as we might naturally expect, an increased, even morbid sensibility of the auditory nerves, so that, in some instances, ordinary whispering and even the respiration of persons present has been painful to the patient.

The gustatory nerves are deprived of their sensibility by the immoderate use of Condiments, Seasonings and other pungent substances. Hence we find drunkards and others in the habit of using many spices and much seasoning, the natural and healthy taste having become deteriorated by the use of Alcohol.

It was my intention to have

continued this subject, viewing it in all its bearings on Digestion, Circulation, Respiration, Absorption &c. but time forbids my so doing.

Therefore at this point I must close, desiring this Essay to be regarded merely as a collection of a few of the materials of a more substantial, complete and symmetrical edifice, which more enlarged mental resources, increased experience and opportunity may enable me to erect in the future, by an intelligent, scientific and successful practice of the Therapeutic art.